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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,859	01/05/2001	Victor Il'ich Kopp	1014-7	3690

7590 10/15/2002
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EXAMINER

LANDAU, MATTHEW C

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 10/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/755,859

Applicant(s)

KOPP ET AL.

Examiner

Matthew Landau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 4-8, 10-14 and 17-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 9, 15 and 16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 January 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Species VIII, shown in Figures 1C and 1F in Paper No. 3 is acknowledged.

A quick review of the drawings clearly indicates that claims 4-6 do not read on the elected species. Figures 1C and 1F do not show an electromagnetic wave source. This feature is shown Figure 1F, which represents an alternate species. Therefore, claims 4-8, 10-14, and 17-21 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 3.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the defect photonic mode must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 9 is objected to because of the following informalities: claim 9 contains the limitation “the said periodic structure”. Applicant is advised that only one identifier can be used.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 15 recite the limitations “the magnitude” and “the speed of light”. There is insufficient antecedent basis for this limitation in the claims. The limitation “a periodic structure having a top portion and a bottom portion of a thickness T” renders the claim indefinite. It is unclear what is meant by “a periodic structure”. Also, it is unclear if the top and bottom portions each have a thickness T, only the bottom portion has a thickness T, or if the entire periodic structure has a thickness T. Furthermore, it is unclear how the structure is “configured” in order to produce a photonic mode with the desired separation. In other words, Applicant claims a desired result without indicating the necessary structural features to achieve the desired result. It is further unclear what is meant by “a nearest lower frequency photonic mode.” It is also unclear

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whether the equation represents the characteristics of the device claimed, or the equation representing the device claimed is still in development, or the device is a design choice by the equation. It is further unclear to what direction the limitation “perpendicular to said layered structure” is referring. Is lasing occurring in a direction perpendicular to a side surface or a top/bottom surface of the structure? Furthermore, Applicant claims a desired result, “such that wide-area coherence lasing at said predetermined frequency...,” without claiming any structural features that would achieve the desired result.

Claim Rejections - 35 USC § 102

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 1-3, 9, 15, and 16 rejected under 35 U.S.C. 102(e) as being anticipated by Kopp et al. (US Pat. 6,404,789, hereinafter Kopp).

In regards to claim 1, as best the examiner can ascertain the claimed invention, Figures 1A and 2A of Kopp discloses a laser apparatus for producing large-area coherent lasing, comprising: a periodic structure 10 having a top portion 14 and a bottom portion 16 of a thickness T and having an average refractive index N, said periodic structure being configured to produce a photonic mode of a predetermined frequency, said photonic mode being separated

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from a nearest lower frequency photonic mode by a frequency greater than determined in accordance with a following expression: $c/2TN$, wherein c is the speed of light in a vacuum; a light-emitting medium 12 disposed within said periodic structure, said light emitting medium being configured to emit electromagnetic radiation at said predetermined frequency; and variable excitation means 22, connected to said periodic structure 10, for applying gain to said periodic structure, said gain ranging from a lower gain to a higher gain and for causing said light-emitting medium to emit electromagnetic radiation in accordance with the magnitude of said gain when said gain exceeds a predetermined lasing threshold, such that wide-area coherence lasing at said predetermined frequency occurs in a direction perpendicular to said layered structure.

In regards to claim 2, Figure 2A of Kopp discloses the photonic mode is a defect mode.

In regards to claim 3, Kopp discloses the periodic structure comprises a plurality of dielectric material layers (12 and 14) of two differing dielectric constants (column 5 lines 15-25).

In regards to claim 9, Figure 1A of Kopp discloses said light emitting medium is composed of a material adapted to emit electromagnetic radiation upon application of a charge current thereto, and wherein said variable excitation means comprises: a plurality of electrodes (18 and 20) connected to said periodic structure 10; and a tunable electrical power source 22, connected to said plurality of electrodes (18 and 20) for providing said charge current to the periodic structure 10 to excite said light-emitting medium to emit electromagnetic radiation (column 5, lines 15-25).

In regards to claim 15, as best the examiner can ascertain, Figures 1A and 2A of Kopp disclose a method for producing large-area coherent lasing utilizing a periodic structure, comprising the steps of: a) providing a periodic structure 10 having a top portion 14 and a

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bottom portion 16 of a thickness T and having an average refractive index N, said periodic structure 10 being configured to produce a photonic mode of a predetermined frequency, said photonic mode being separated from a nearest lower frequency photonic mode by a frequency greater than determined in accordance with a following expression: $c/2TN$, wherein c is the speed of light in a vacuum; b) providing a light-emitting medium 12 disposed within said periodic structure 10, said light-emitting medium being configured to emit electromagnetic radiation at said predetermined frequency; and c) applying gain to said periodic structure (via power source 22), said gain ranging from a lower gain to a higher gain to cause said light-emitting medium to emit electromagnetic radiation in accordance with the magnitude of said gain when said gain exceeds a predetermined lasing threshold, such that wide-area coherence lasing at said predetermined frequency occurs in a direction perpendicular to said layered structure.

In regards to claim 16, Figure 2A of Kopp discloses said photonic mode is a defect mode.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew C. Landau whose telephone number is (703) 305-4396.

The examiner can normally be reached from 8:00 AM-4:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800

Matthew C. Landau

Examiner

October 11, 2002